The Potential Role of Open Data for Public Engagement in Environmental Assessment

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Abstract

An Environmental Assessment (EA) is a process of identifying the potential impacts of development projects and involves gathering and interpreting multiple types of data, including input from public stakeholders. In the Mackenzie Valley, Northwest Territories (NWT) effective environmental data management and public participation for EA has been an ongoing challenge and there are opportunities to explore high level communication and interaction techniques. Open data is an evolving research field focused on data exchange and innovation in public engagement. Public participation Geographic Information Systems (PPGIS) focuses specifically on leveraging geospatial data to engage the public in policy-making. Effective public engagement in EA depends on the openness of the entire process to sharing and receiving information about environmental and social impacts, much of which is spatial. Using the context of NWT, we propose that EA and land use decision-making presents an opportunity to apply and advance PPGIS for public participation in policy-making.

Background and Relevance

EA Data and Public Participation

Environmental Assessment (EA) has become one of the most consistent and widely adopted environmental management tools internationally (Jay, Jones, Slinn, &

Wood, 2007). The basic steps of EA include a project proposal, a preliminary assessment (screening), scoping the relevant issues for assessment, completing the assessment, an EA report, agency review, decision-making, and monitoring and follow-up (Hanna, 2016). The purpose of an EA is to ensure that development projects do not proceed without full consideration of the environmental impacts associated (Hanna, 2016). The decision to approve or reject a project is part of EA, but it is also a process that involves gathering and interpreting information about environmental impacts. EA requires large data sets and multiple data types to consider the social and cultural environments as well as the biophysical environment (Esteves, Franks, & Vanclay, 2012). A challenge for EA is that it requires the compilation of these datasets at multiple spatial scales to assess impacts at the regional and project specific scales (Harriman & Noble, 2008; Pope, Bond, Morrison-Saunders, & Retief, 2013). Information about the location of existing environmental stressors, cultural sites, communities, and key habitat areas is essential for evaluating the implications of development projects and making land-use decisions.

Public participation is a legislated requirement of EA and is widely regarded to be beneficial for effective impact assessments (Glucker, Driessen, Kolhoff, & Runhaar, 2013; Hanna & Noble, 2015; O'Faircheallaigh, 2010; Sinclair & Diduck, 2016; Udofia, Noble, & Poelzer, 2016). Public involvement can improve the implementation of decisions, stimulate learning and environmental awareness, and help to ensure that the assessment of environmental and social impacts is complete (Glucker et al., 2013; O'Faircheallaigh, 2010; Sinclair & Diduck, 2016). Information should flow in two directions; project and process information should be available to the public and

opportunities for stakeholders to communicate concerns to proponents and decision-makers should be provided (Glucker et al., 2013; Hanna & Noble, 2015; O'Faircheallaigh, 2010; Sinclair & Diduck, 2016). Ideally, public participation begins early and is maintained throughout the EA process and not just at one or two stages (Andre, Enserink, Connor, & Croal, 2006; Hanna & Noble, 2015). In NWT, there is a co-management approach for EA in relation to land claim areas. The Mackenzie Valley Resource Management Act (1998) stipulates that the rights of Indigenous groups, traditional knowledge, and the social and cultural wellbeing of northern communities must be incorporated into development assessments. Gathering information from communities and Indigenous groups is essential for accountable processes and assessing these impacts. A recent NWT Environmental Audit (2015) has highlighted ongoing challenges to EA processes including incorporating information about community wellness and cumulative environmental impacts, ensuring meaningful participation, and compiling and reporting monitoring data in consistent, available, and usable formats.

Open Data, PPGIS, and Decision-making

Open data describes datasets that are available and accessible for public use without restriction. There is a growing collection of research that suggests utilizing open data to facilitate information exchange and actively involve the public in decision-making not only aligns with ideals of transparency, but can also work to improve decision-making (Bryson, Quick, Slotterback, & Crosby, 2013; Chun, Shulman, Sandoval, & Hovy, 2010; Roy, 2014; Sivarajah et al., 2016; Woodford & Preston, 2013).

Public Participation Geographic Information Systems (PPGIS) research is focused on the potential for publically accessible geospatial data to facilitate public involvement and empowerment in policy-making (Elwood & Ghose, 2001; Sieber, 2006; Sieber, Robinson, Johnson, & Corbett, 2016). Advancements in online forums and tools have made sharing and interacting with large and complex datasets possible and spatial datasets are increasingly available (Sieber, 2006). Additionally, the information needed for public policy decisions often includes spatial components, and the visualization of datasets can and aid understanding and analysis (Sieber, 2006). Making spatial data and tools available to stakeholders provides opportunities for high level interaction and public data collection (Elwood & Ghose, 2001). While knowledge and tools about how public participation could be facilitated in various contexts have been developed through open data and PPGIS research, the integration of PPGIS into specific policy areas and the process of decision-making remains a challenge (Sieber, 2006).

There have been recent efforts in NWT to make environmental monitoring information publically accessible. The NWT Discovery Portal, which is operated by the Government of NWT and the Centre for Geomatics was launched as a "comprehensive online source for environmental monitoring knowledge in the Northwest Territories." It allows data downloads and uploads and includes information about the status of past, and current EA processes and participation opportunities.[1] This Portal is reflective of an effort in NWT to leverage online platforms to provide accessible information and innovative participation tools. In Canada, particularly at the municipal level, there are

[1] http://nwtdiscoveryportal.enr.gov.nt.ca/geoportal/catalog/main/home.page

numerous similar examples of online open data platforms and catalogues (Davies & Lithwick, 2010). However, there are ongoing needs for improved functionality, data quality standards, and opportunities for two-way communication and public engagement. The utility of open data in non-urban settings and specific policy areas remains poorly understood and the application of spatial data interfaces in NWT to facilitate participation and an improved public voice in EA has not been explored.

Discussion

Public participation in EA depends on comprehensive access to information for all public stakeholders and the openness of regulators to accepting multiple types of information throughout the process (Hartley & Wood, 2005; Sinclair & Diduck, 2016). In practice, participation processes in EA have been critiqued for failing to grant a legitimate role for the public (Diduck & Mitchell, 2003; Glucker et al., 2013; O'Faircheallaigh, 2010; Udofia et al., 2016) and there have been efforts in NWT to encourage participation and make geospatial and environmental monitoring data accessible. Given this context, we argue that there is a potential for open spatial data to be employed within the EA processes for improved public engagement that could help contribute to decision-making. PPGIS provides insight into how interactions with spatial data might facilitate public engagement in policy-making. There are ongoing challenges in terms of how to integrate PPGIS into policy-making structures. EA requires public input and demands large and diverse datasets about the biophysical, social, economic, and community impacts of development at multiple spatial scales.

Online data platforms can provide effective interfaces for high level interaction, help make sense of publicly provided information, and to allow ideas to be directly contributed to decision-makers. EA presents an opportunity for the tools and practice of PPGIS to be applied and support public involvement in land use related decision-making.

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